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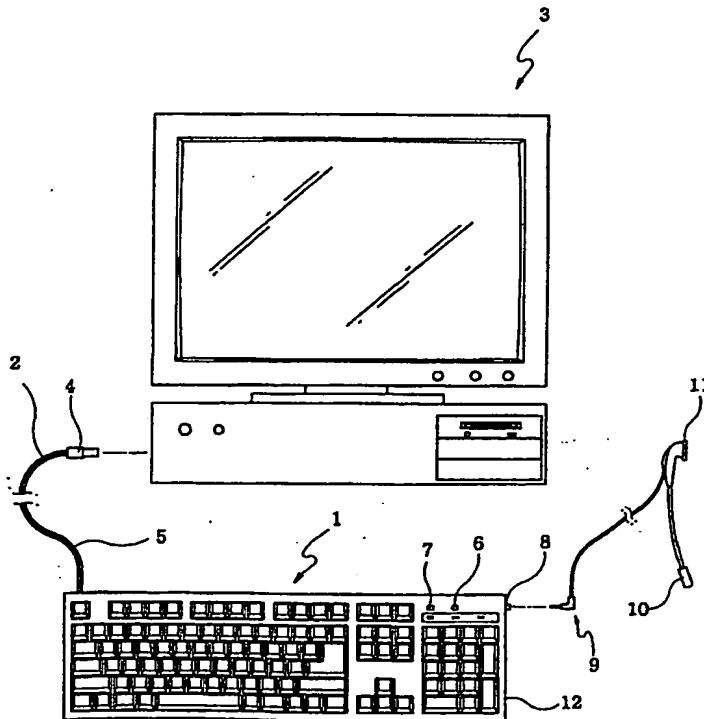
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(54) Title: COMPUTER PHONE

## (57) Abstract

The present invention relates to a phone using a computer. When an incoming phone call occurs while a user is using a computer, the phone allows the user to receive the general phone call by pushing a hook switch, thereby switching the phone to a general phone mode. When the phone is switched to the general phone mode, the phone allows the user to perform a hands-free call by means of an earphone. If the hook switch becomes "ON" after the call is finished, the phone is switched to an Internet phone mode. On the other hand, when transmitting a call in the general phone mode or the Internet phone mode is required, the phone is switched to a dialing mode by pushing a select key, thereby allowing the user to perform a dialing function using number keys. When the select key is pushed again, the keyboard is allowed to perform a general keyboard function. The phone may allow the user to selectively utilize a general phone function and an Internet phone function as well as a general computing function, using a hook switch, select keys, numeric keys and function keys, thereby maximizing the efficiency of work and reducing installation space.



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## COMPUTER PHONE

## Technical Field

The present invention relates, in general, to computer phones and, more particularly, to a computer phone that is capable of allowing a user to make a phone call without holding a receiver and transmitter of the phone by hand, thereby allowing the user to receive and transmit a phone call using a computer in an office, etc. while performing work using the computer and to make a phone call in an Internet phone mode while performing work using the computer.

## Background Art

Recently, a computer is not only provided to almost every person in an office or a laboratory so as to perform work as intelligence technology is developed, but one or more telephones are also provided to almost every person so as to perform work as communication technology is developed.

Therefore, a person working in an office or laboratory may use the telephone while operating the computer. In order to enable this, a power line and a communication line for the computer and a telephone line for the telephone should be separately provided to each person's desk.

In addition, since computer-related devices, such as a computer main body, a monitor, a keyboard and a printer, and a telephone are installed on a desk, the space available on the desk is reduced, thereby decreasing the degree of space utilization. Further, when a person makes a phone call while operating the computer, the person holds the receiver of the telephone with the shoulder and the neck while manipulating the keyboard of the computer, thereby rendering him to take an inconvenient posture so that pain may be experienced in the neck.

In order to solve these problems, there are proposed two approaches in which the mouse of the computer is endowed with the function of the receiver and the transmitter of the telephone and the keyboard of the computer is endowed with

the function of the receiver and the transmitter of the telephone.

However, according to the conventional techniques wherein either the mouse or the keyboard is endowed with the function of the receiver and the transmitter, there occurs an advantage wherein the degree of space utilization of the desk is increased, while there occurs a disadvantage wherein the computer and the telephone cannot be used at the same time.

That is, in the case of a computer phone utilizing a mouse, when a user manipulates the mouse, the operation of the mouse becomes difficult in comparison with a case where a mouse is not endowed with the function of the receiver and the transmitter of a telephone. In the case of a computer phone utilizing a keyboard, there is caused to a user inconvenience wherein he should hold the receiver with the neck and shoulder when he receives a phone call while manipulating a keyboard and he should stop operating a computer and perform a dialing using a telephone.

#### Disclosure of the Invention

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a computer phone, which is capable of eliminating inconvenience when a phone function and a computer function are utilized at the same time, thereby enabling a user to easily and conveniently make a phone call while operating a computer and allowing the user to make a phone call without hindrance in performing computer work.

Another object of the present invention is to provide a computer phone, which is capable of freely selecting a general phone mode and an Internet phone mode, thereby making a phone call in the general phone mode or exchanging a voice or text in the Internet phone mode.

In order to accomplish the above object, the present invention provides a computer phone that functions as follows. When an incoming phone call occurs while a user is operating a computer, the computer phone allows the user to receive

the general phone call by pushing a hook switch, thereby switching the computer phone to a general phone mode. When the computer phone is switched to the general phone mode, the computer phone allows the user to perform a hands-free call by means of an earphone. If the hook switch becomes "ON" after the phone call is finished, the phone is switched to an Internet phone mode. On the other hand, when transmitting a call in the general phone mode or the Internet phone mode is required, the phone is switched to a dialing mode by pushing a select switch, thereby allowing the user to perform a dialing using number keys. When the select switch is pushed again, the keyboard is allowed to perform a general keyboard function. The computer phone may allow the user to selectively utilize a general phone function and an Internet phone function as well as a general computing function, using a hook switch, select keys, numeric keys and function keys, thereby maximizing the efficiency of work and reducing installation space.

#### Brief Description of the Drawings

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a front view showing a construction of a phone using a computer according to an embodiment of the present invention;

Fig. 2 is a plan view showing the numeric keypad of a keyboard of the present invention;

Fig. 3 is a block diagram schematically illustrating an entire construction of the present invention; and

Fig. 4 is a plan view showing a part of a pattern that may be applicable to the keyboard of the present invention.

#### Best Mode for Carrying Out the Invention

The present invention is described in detail using an embodiment in the

following.

Figs. 1 and 2 schematically illustrate a construction in accordance with the embodiment of the present invention.

5 A keyboard 1 is connected through a keyboard line 2 and an audio jack 4 to a computer main body 3 in which a speaker plug is connected to a speaker terminal and a microphone plug is connected to a microphone terminal.

A hook switch 6 and a selective switch 7 are mounted to the keyboard 1 wherein a telephone line 5 is connected to a bridge circuit therein.

10 A transmitter 10 and a receiver 11 are connected to an earphone jack 8 of the keyboard 1 through an earphone plug 9 so as to enable a phone call.

In a numeric keypad 12 of the keyboard 1, the "\*" key, the "." key and the "/" key of the numeric keypad 12 of the keyboard 1 may be respectively utilized as the "\*" key, the "#" key and the redial switch of the keypad of the telephone.

15 Fig. 3 is a block diagram schematically illustrating an entire construction of the present invention.

When a bell signal of 20 Hz and AC 75V is inputted to a bell receiving circuit 14 through a bridge circuit 13, the bell signal is outputted from the bell receiving circuit 14 to operate a buzzer 15, and a bell indicator (a light emitting diode) 16 is operated to visually indicate that a phone call is received from the outside.

20 When the hook switch 6 is pushed by a user, an on-hook detecting circuit 17 is operated to activate a loop control circuit 18 and the loop control circuit 18 is operated to activate a speech circuit network 19, thereby forming one circuit network.

On the other hand, the loop control circuit 18 allows a call indicator 20 to be operated, thereby causing the state of a phone call to be visually indicated.

25 The earphone jack 8 connected to the speech circuit network 19 is engaged with the earphone plug 9, so that a sound signal inputted through the transmitter 10 is transformed into an electric signal in the transmitter 10 and is inputted to the speech circuit network 19.

The sound signal amplified in a transmitting amplifier of the speech circuit network 19 is outputted to the telephone line 5 through the loop control circuit 18 and the bridge circuit 13, thereby transmitting the sound signal to a counterpart.

5           An electric signal inputted from the telephone line 5 is amplified through a receiving amplifier of the speech circuit network 19, and is inputted to the receiver 11 connected to the earphone plug 9, thereby reproducing a voice by vibrating the tympanum of the receiver 11.

10           When the selective switch 7 is pushed, a dial circuit 21 is connected to the numeric keypad 12. If a phone number is inputted by pressing the number keys of the numeric keypad 12 of the keyboard 1, a dial signal generator of the dial circuit 21 is operated, thereby outputting a dial tone.

The dial tone is amplified in an amplifier of the speech circuit network 19 and transmitted to the outside through the telephone line 5.

15           When the selective switch 7 is manipulated after a user finishes using the telephone, the numeric keypad 12 is connected to the keyboard line 2, thereby allowing information to be inputted through the keyboard 1.

20           In a case where the general phone mode is not selected and the hook switch 6 is pushed again, the on-hook detecting circuit 17 is operated to allow an Internet phone 22 to be utilized using the speaker terminal and the microphone terminal connected to the audio jack 4.

Fig. 4 illustrates a part of a pattern that may be applicable to the keyboard of the present invention.

25           In order to perform the general phone mode and the computer mode easily, the on/off recognizing terminals of the "\*" key, the "#" key, the redial key and the "0-9" keys of the telephone are respectively positioned on the on/off recognizing terminals of the "\*" key, the "." key, the "/" key and "0-9" keys of the numeric keypad 12 of the keyboard 1.

30           The computer phone of the present invention allows the general phone mode and the Internet phone mode to be selected by rendering the telephone circuit to be contained in the keyboard connected to a computer main body for inputting

information and connecting the earphone set to the telephone circuit.

When the bell signal of 20 Hz and AC 75V is inputted to be transmitted to the bell receiving circuit 14 via the bridge circuit 13 while the user is inputting information into the computer main body using the keyboard 1, the bell receiving circuit 14 recognizes the reception of a phone call and notifies the user of the reception of the phone call by generating not only a bell sound by means of the buzzer 15 but also a light by means of the bell indicator 16 (the light emitting diode).

When the user, who recognizes the reception of a phone call, pushes the hook switch 6 one time so as to receive the phone call, the on-hook detecting circuit 17 is operated to activate the loop control circuit 18.

The loop control circuit 18 operates the speech circuit network 19, so that one direct current circuit network is formed, thereby enabling the receiving and transmitting of the phone call.

Simultaneously, the loop control circuit 18 turns on the call indicator 20, thereby allowing the state of a phone call to be visually notified.

The user's sound signal transmitted through the transmitter 10 that is connected to the earphone jack 8, which is connected to the speech circuit network 19, through the earphone plug 9 is transformed into an electric signal in the transmitter 10, and is inputted to the speech circuit network 19. In the speech circuit network 19, the sound signal amplified in a transmitting amplifier of the speech circuit network 19 is outputted to the telephone line 5 through the loop control circuit 18 and the bridge circuit 13, thereby allowing his counterpart to hear the user's voice.

The electric signal corresponding to the counterpart's voice is transmitted to the speech circuit network 19 through the bridge circuit 13 and the loop control circuit 18, is amplified through the receiving amplifier of the speech circuit network 19, and is transmitted to the receiver 11 connected to the receiving amplifier through the earphone jack 8 and the earphone plug 9 to vibrate the tympanum of the receiver 11, thereby allowing the user to hear the counterpart's voice.



When the user pushes the selective switch 7 again after a phone call is finished, the numeric keypad 12 and the dial circuit 21 are blocked, thereby causing the computer phone to await a phone call.

5 In such a case, since the user does not need to manipulate the numeric keypad 12 of the keyboard 1, the user, who wears the receiver 11 and transmitter 10 connected to the earphone plug 9, may input information freely with both hands through the keyboard 1.

When the user pushes hook switch 6 one time while turning on the selective switch 7 so as to perform a phone call, the on-hook detecting circuit 17 is  
10 operated to activate the dial circuit 21, so that the dial circuit 21 may recognize a dialing.

As a result, when the user inputs a desired dialing signal using the "0-9" keys, the dialing signal generator of the dialing circuit 21 is operated to output a dialing tone corresponding to the dialing signal.

15 This dialing tone is transmitted to the outside through the telephone line 5 after the dialing tone is amplified in the amplifier of the speech network 19, thereby forming a communication path with his counterpart.

Since the keys of the telephone are not operated in a case where the communication path is formed after dialing, the computer mode may be performed  
20 using the numeric keypad 12 of the keyboard 1 after the selective switch 7 is turned on.

When the hook switch 6 is pushed again in a state where the general phone mode is not selected, the on-hook detecting circuit 17 is operated to be connected to computer main body 3 through the keyboard line 2 and the audio jack  
25 4. As a result, the computer is shifted to the Internet phone mode and, consequently, the Internet phone 22 can be applied by means of the speaker terminal and the microphone terminal of the sound card of the computer main body 3.

Although a case where an earphone set is employed has been described in  
30 this embodiment, a headphone set may be employed instead of the earphone set.

### Industrial Applicability

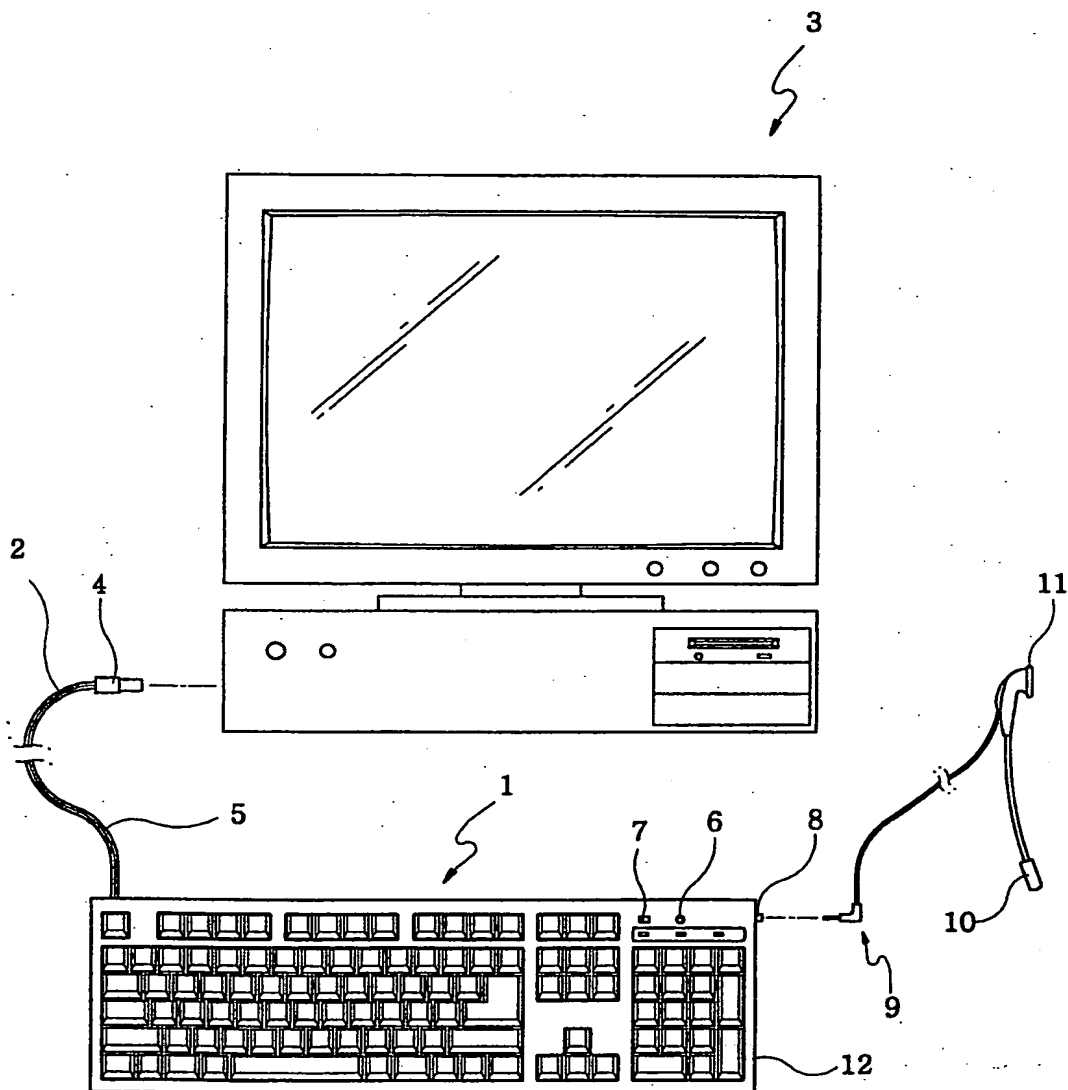
According to the present invention, when an incoming phone call occurs while a user is operating a computer, the computer phone allows the user to receive the general phone call by pushing a hook switch, thereby switching the computer  
5 phone to a general phone mode. When the computer phone is switched to the general phone mode, the computer phone allows the user to perform a hands-free call by means of an earphone. If the hook switch becomes "ON" after the phone call is finished, the phone is switched to an Internet phone mode. On the other  
10 hand, when transmitting a call in the general phone mode or the Internet phone mode is required, the phone is switched to a dialing mode by pushing a select switch, thereby allowing the user to perform a dialing using number keys. When the select switch is pushed again, the keyboard is allowed to perform a general  
15 keyboard function. The computer phone may allow the user to selectively utilize a general phone function and an Internet phone function as well as a general computing function, using a hook switch, select keys, numeric keys and function keys, thereby maximizing the efficiency of work and reducing installation space.

## Claims:

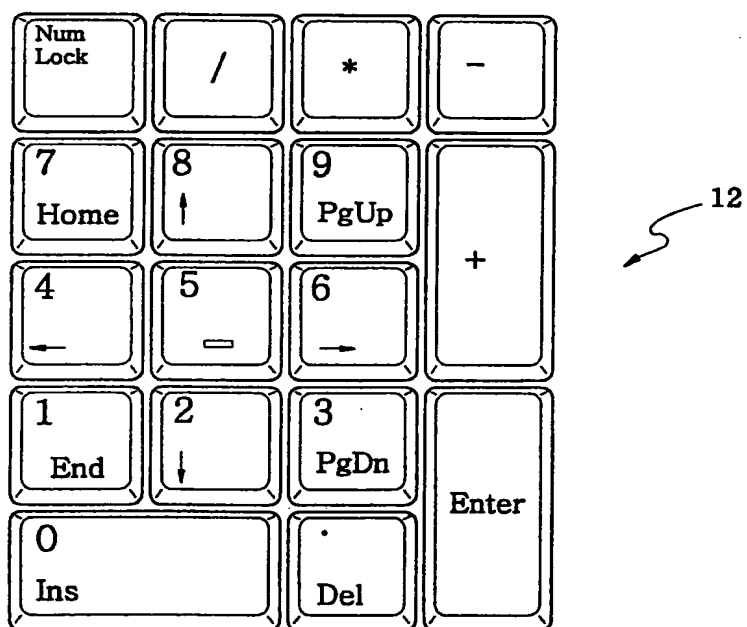
1. A computer phone, wherein  
a keyboard is connected through a keyboard line and an audio jack to a  
computer main body in which a speaker plug is connected to a speaker terminal  
5 and a microphone plug is connected to a microphone terminal,  
a hook switch and a selective switch are mounted to the keyboard,  
a transmitter and a receiver are connected to an earphone jack of the  
keyboard through an earphone plug so as to enable a phone call,  
a telephone line is connected to a bridge circuit in the keyboard connected  
10 to the computer main body through the keyboard line,  
an on-hook detecting circuit connected to the bridge circuit of the  
keyboard through the hook switch is connected to a speech circuit network through  
a loop control circuit, and  
a dial circuit connected to the on-hook detecting circuit is connected to a  
15 numeric keypad of the keyboard via the selective switch.
2. The computer phone according to claim 1, wherein on/off recognizing  
terminals of an number-lock switch, a "\*" key, a "#" key, a redial key and "0-9"  
keys of the telephone respectively together with on/off recognizing terminals of an  
on-hook switch, a "\*" key, a "." key, a "/" key and "0-9" keys of the keypad of  
20 the keyboard are formed on said numeric keypad of the keyboard.
3. The computer phone according to claim 1, wherein said dial circuit  
connected to said on-hook detecting circuit is connected to a separate numeric  
keypad for dialing.
4. The computer phone according to claim 1, wherein said earphone jack  
25 connected to said speech circuit network is connected to an earphone set having  
separate dial keys and a separate dial circuit.

5. The computer phone according to claim 1, wherein a transmitter and a receiver are contained in said earphone set so as to enable a phone call.

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FIG.1

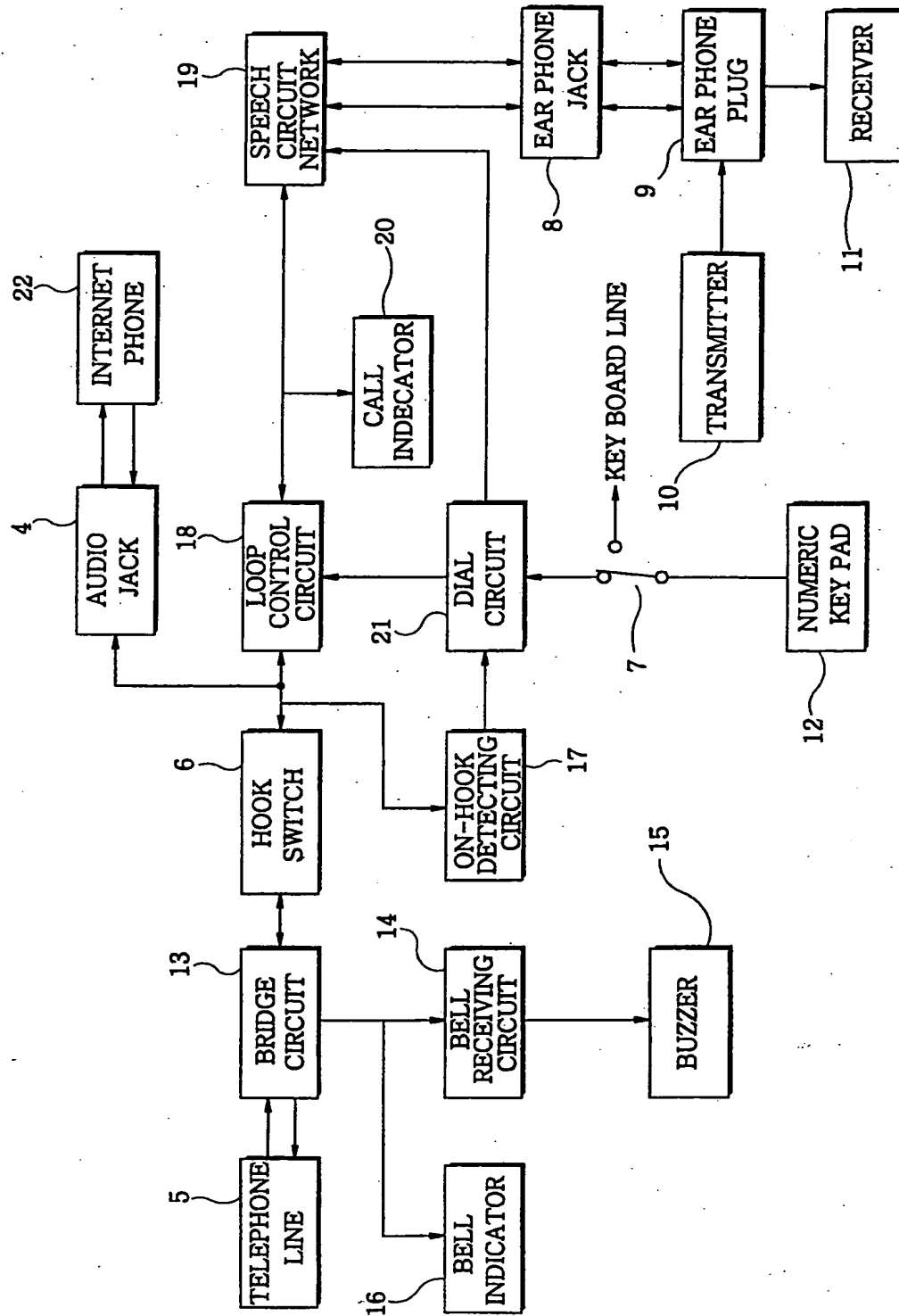


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FIG.2

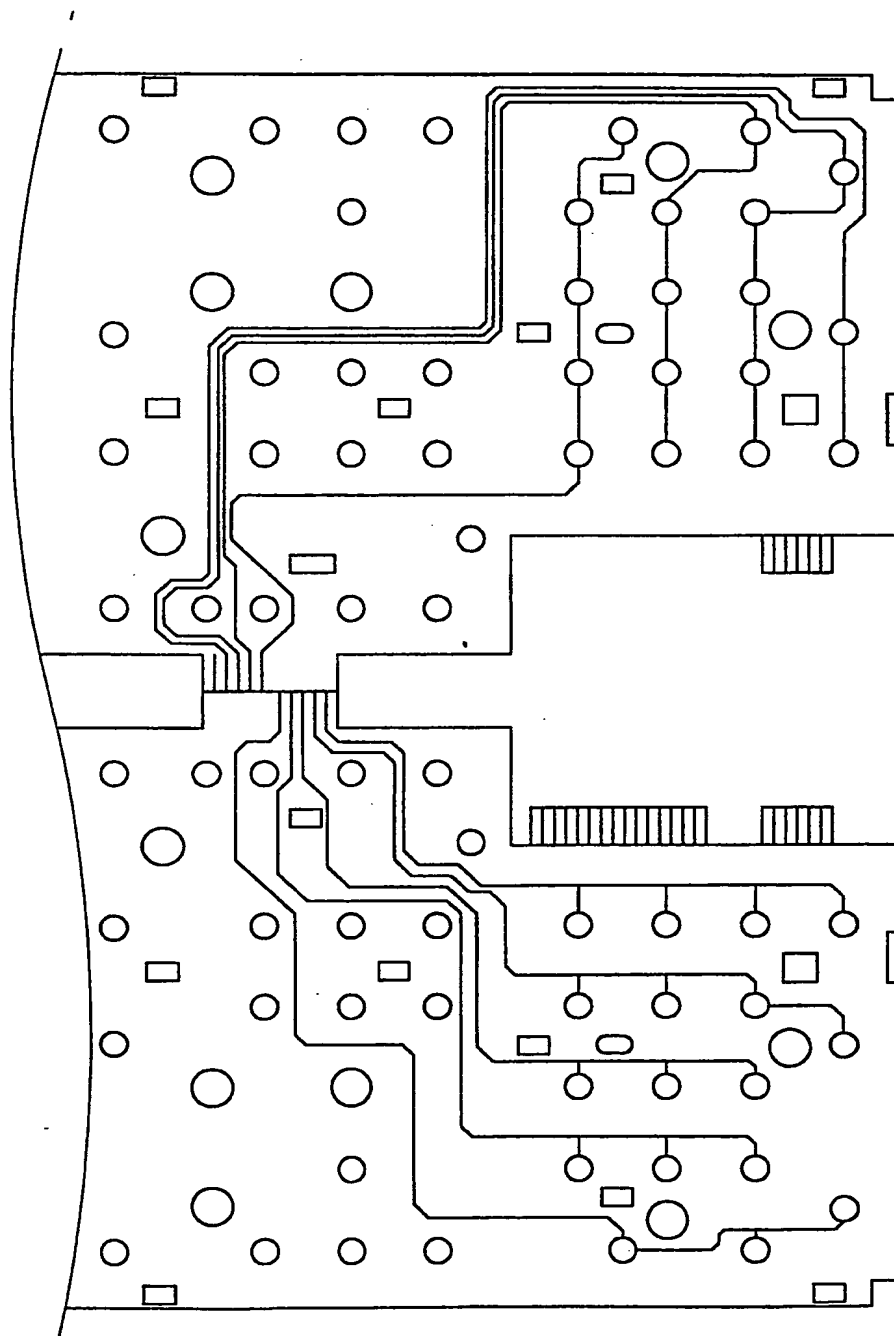


3/4

FIG.3




4/4  
FIG.4





# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/KR00/00093

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>  <b>IPC7 H04M 11/00</b>  According to International Patent Classification (IPC) or to both national classification and IPC																	
<b>B. FIELDS SEARCHED</b>  Minimum documentation searched (classification system followed by classification symbols) IPC7 H04M 11/00  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean Patents and applications for inventions since 1975 Korean Utility models and applications for Utility models since 1975  Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) FPD, USPTO, PAJ : computer, telephone, keyboard PATROM																	
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 10%;">Category*</th> <th style="width: 70%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 20%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Y</td> <td>US 4860342 A (David L. Danner) 22 Aug. 1989 See the whole document</td> <td style="text-align: center;">1- 21</td> </tr> <tr> <td style="text-align: center;">A</td> <td>JP 11-143617 A (Artwork CO.) 28 MAY 1999 See the Abstract, Fig1, and Fig2</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>KR 99-7717 A (Lim, Jung Fil) 25 Jan. 1999 See the whole document</td> <td style="text-align: center;">1 - 3</td> </tr> <tr> <td style="text-align: center;">A</td> <td>KR 98-63281 U (SAMSUNG CO.) 16 Nov. 1999 See the abstract, claim1, and fig1</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	US 4860342 A (David L. Danner) 22 Aug. 1989 See the whole document	1- 21	A	JP 11-143617 A (Artwork CO.) 28 MAY 1999 See the Abstract, Fig1, and Fig2	1	Y	KR 99-7717 A (Lim, Jung Fil) 25 Jan. 1999 See the whole document	1 - 3	A	KR 98-63281 U (SAMSUNG CO.) 16 Nov. 1999 See the abstract, claim1, and fig1	1
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